Citizen Science Projects (MOOC) 2.14

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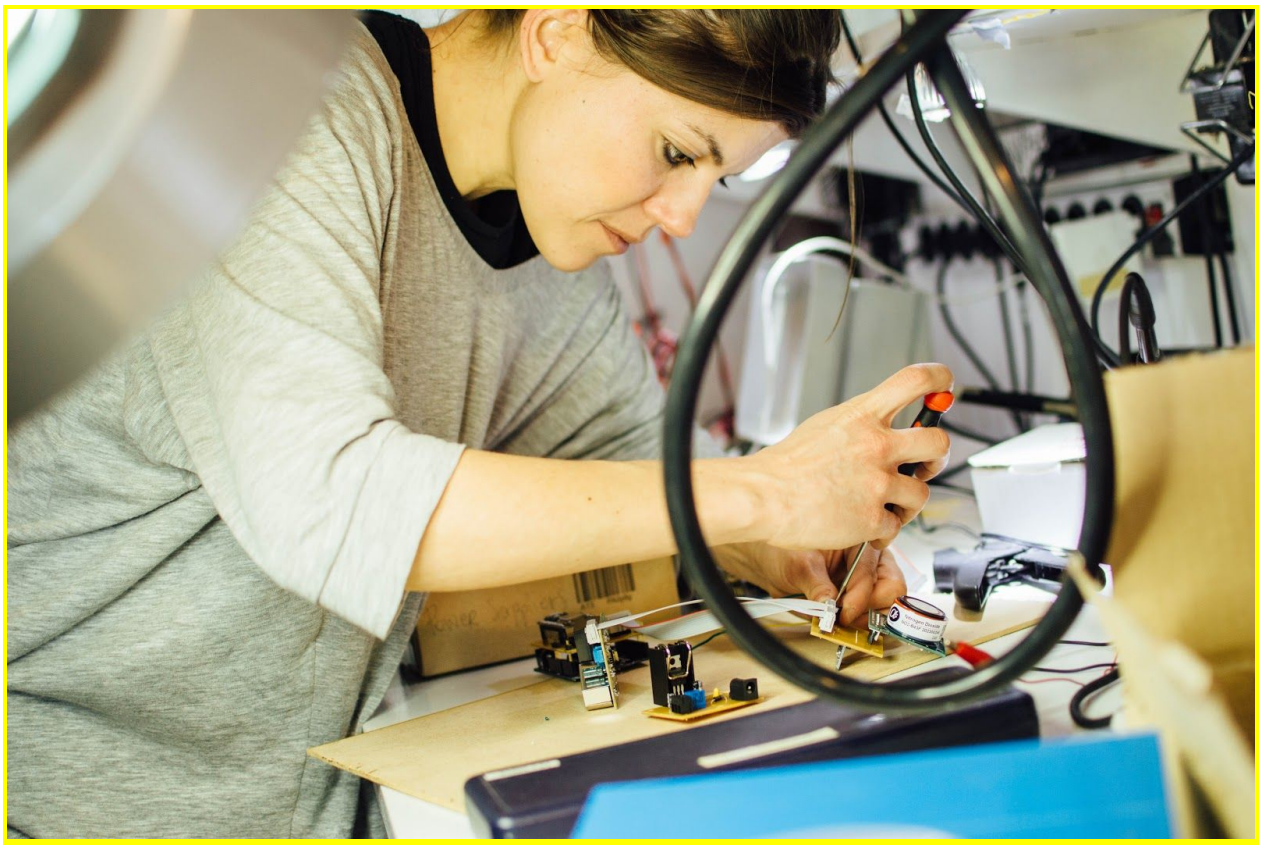

You don’t need expensive or complicated scientific equipment to monitor your environment. There are lots of simple ways to collect data about the world around you; there are also many ways to build your own sensors with a little bit of technical skill. Data collected this way can still be useful to scientists, for campaigning or making better decisions, and for your own interest!

##Simple sensors

Sensors don’t have to be complicated! For example, if you wanted to learn about rainfall, you might build a [simple container to collect rain and measure it every day](https://www.wikihow.com/Measure-Rain). But there are also more sophisticated experiments you can run yourself with simple equipment.

[Public Lab](https://publiclab.org/) are a DIY environmental science community who make a variety of toolkits for building simple sensors. Their Foldable Paper Spectrometer turns your smartphone camera into a simple spectrometer—a tool that scientists use to measure different types of light and learn about materials. Some of their other kits use cameras attached to kites and balloons to help citizens map areas from above. Citizens used this method to [capture images of the Deepwater Horizon oil spill](https://publiclab.org/wiki/gulf-coast).

##DIY electronics and sensors

We can build more sophisticated sensors using some DIY electronics. [My Naturewatch](https://mynaturewatch.net/make) has designed a wildlife camera that you can make yourself using a Raspberry Pi Zero (a tiny, dual-display, desktop computer), a USB power bank, and some household objects. [Nature Bytes](http://naturebytes.org/) has also designed a build-your-own camera based on the Raspberry Pi A+ and Pi camera, for which they have also designed a 3D-printed case. Set either of these cameras up in your garden, and it will capture photos of birds that you could use to understand patterns of wildlife in your local area.

In previous steps, we heard about [Smart Citizen](https://smartcitizen.me/) and the sensor toolkit that comes ready-made with sensors including noise, air temperature, light, humidity and air quality. The toolkit connects to an online platform to share data. If you have a little more experience with coding, you can even extend it to build your own sensors and experiments.

##Using your data

Once we know how to build some sensors and collect data, what can we use them for? [Making Sense](http://making-sense.eu/) was an EU-funded project that used the Smart Citizen kit to help people collect data on noise and take action together. They worked with communities to understand what local issues mattered to them, design sensors and experiments. The data collected by participants were used as evidence to campaign for changes.

In a previous [video](https://www.futurelearn.com/courses/weobserve-the-earth/3/steps/870637) we spoke about one of their projects centred around noise pollution in Barcelona, where residents were often kept awake by crowds of people sitting on the local square. They used Smart Citizen to build a [public installation to show noise levels](http://making-sense.eu/making-sense-noise-pollution-placa-del-sol/) and help people reflect on noise levels. In Kosovo, the Making Sense team collected data about air quality that led to a ban on cars and a change to the country's constitution to demand the right to clean air!

##Share your experience!

+ Have you been involved in any DIY data collection?
+ What kind of data did you collect and how did it go?